Performance of Intra-EU reforms in Central Africa: Empirical Verification

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Abstract *This study investigates the impact of preferential reforms of the mid-1990 implemented in CEMAC zone on the determinants of intra-regional trade. Using a gravity equation, the study shows the influence of each variable under studies during the two sub-periods (before and after the reforms that is 1984 -1993 and 1994 – 2003) on the intra-regional trade. Using a gravity equation, the study shows the influence of each variable under studies during the two sub-periods on the intra-regional trade. The results show that the populations (both home and away), cultural linkages and the proximities were directly related to intra-regional trade after the reforms than before. At the same time, the transactions and transport costs were negatively related to the intra-regional trade, mostly after the implementation of reforms.*

Keywords: *reforms, intra-regional trade, Central Africa*

1. Introduction

The integration of African countries in the world market passes through regional integration and closer cooperation. This belief was strengthened during the 90's with the acceleration of the globalization process and the risk of increasing marginalization of African countries. The integration and economic openness are regularly recommended by many authors and international experts as a strategy to stimulate sustainable economic growth and sustained development of sub-Saharan Africa.

However, in practice, the integration efforts in Africa have had limited success, particularly in terms of increased intra-regional trade and, more importantly, in terms of improving economic growth of the signatories of regional agreements (Guillaumont and Guillaumont, 1993). According to Foroutan and Pritchett (1993) the failure of integration in Africa south of the Sahara in terms of regional trade can be essentially explained by the inability and / or lack of willingness on the part of member countries to undertake preferential reforms. These reforms would be a prerequisite for the creation of additional common exchanges in the areas of integration.

In the early 90's, in response to the severe economic crisis of the mid-80s, all the countries of the CEMAC region was under structural adjustment program (SAP). But, various applications of SAP have led to mixed results. The shock wave will come in January 1994; however, with the 50% devaluation of the CFA franc; the objective of the monetary adjustment is to promote a return to economic competitiveness compared to competitors who had made multiple competitive devaluations. She also had the main advantage of making compelling and especially to accelerate the economic reforms that had been loosely applied or simply delayed in the past.

The CEMAC countries have adopted new ambitions community by implementing a comprehensive economic reform program based mainly on unilateral liberalization of key sectors. In the commercial sector in particular, the reform consisted of a gradual easing of protectionist tendencies that had prevailed since the decade 60's. These reforms, changing the incentive structure, aimed primarily at reducing the role of

government in economic activities and promote private sector development from the public sector. The reform was preferred for its removal of tariff and non tariff barriers to intra-regional trade, a common external tariff and the recovery of intra regional process (free movement of goods and people, infrastructure construction projects, regional transport…).

Since the beginning of the implementation of all these reforms, very little work to our knowledge have attempted to assess their impact (preferential economic reforms of the mid-90) on the determinants of intra-Community trade. Yet the need to assess the impact of these reforms is of great importance both for the authorities of the CEMAC as international institutions and accompanying initiators of these reforms in order to assess their effectiveness and efficiency on factors that may increase or even reduce them. In addition, studies so far have been limited only to measure their impact in terms of creation and trade diversion (Mata, 2005).

Our work is primarily intended to fill this gap. Nous nous proposons d'évaluer l'impact de ces réformes préférentielles du milieu des années 1990 sur les déterminants des échanges commerciaux entre les pays membres de la sous région CEMAC. We propose to evaluate the impact of these reforms on the determinants of trade between the member countries of the CEMAC sub-region.

2. Theoretical Foundations of the Gravity Model and Review of the Empirical Literature

2.1 Theoretical Foundations of the Gravity Model

There are several techniques and methods for assessing regional trade including the monitoring of macroeconomic indicators such as growth and inflation, trade flows and the revealed comparative advantages (Yeats, 1997; Frankel, 1997). Of these, the gravity model is a simple and often giving good result to assess the volume of bilateral trade (and Gbetnkom Avom, 2005).

The gravity model is a generic family of quantitative models developed by astronomer Stewart in 1940. It was a great success in the empirical studies during the 60s (Evenett and Keller, 2002). However, despite this success, the gravity model has suffered for several years, because of lack of theoretical foundations. Multiple forms of equations of the model that succeeded in the empirical literature can be explained by the absence of a consensus theory (Tinbergen, 1962; Pöyhönen, 1963, Linneman, 1996, Aitken, 1973; Sapir, 1981). Thanks to a recent wave of theoretical work, the gravity model has gone from an embarrassment of poverty of theoretical foundations to an embarrassment of riches origins theory (Frankel, 1998). Despite the fact that discussions continue, it is now recognized that the theoretical foundations of the gravity model are supported by microeconomic considerations (Tinbergen, 1962 Linneman, 1966; Anderson, 1979, 1990), by theories of international trade (Pöyhönen 1963, Bergstrand 1985; Krugman, 1979; Deadorff, 1995) and finally by the new economic geography (Stewart, 1940; Krugman, 1999).

Bergstrand (1985), for example, derived the equations for gravitational differentiated products based on implicit structural models Ricardian, Heckscher-Ohlin and increasing returns to scale. The approach taken in the context of this paper is based somehow on this theoretical justification, as the preferential assessment we propose to measure (empirically) the impact on the determinants are expected to improve the exploitation of comparative advantages driven by differences in factor proportions and productivity of production factors (returns to scale model).

2.2 Review of the Empirical Literature

If the applications of the gravity model are numerous in Europe and Latin America (Balassa, 1988, Eichengreen and Bayoumi, 1995), they are nevertheless quite rare in African countries. The first application we are aware of the gravity model to African countries south of the Sahara (SSA) is the work of Foroutan and Pritchett (1993). The goal of these authors was to quantify the potential intra-SSA trade and to compare the

level of trade observed. They come to the conclusion that the level of intra-SSA trade is low for structural reasons.

Others, like Naudet (1993), rather think that the low level of trade stems from the fact that the countries of the region do not fully exploit their commercial potential. For the latter, trade in West Africa to take just this example could represent 25% of total trade by 2020.

Elbadawi (1997), using a conventional gravity model enhanced to identify the determinants of intra-African trade, shows that the experience of regional integration in SSA has been a failure like that of other developing regions (including the Latin America).

In a study conducted in the framework of SADC, Cureau (2000) used a gravity model to show that for inter-SADC trade over the period 1980-1992 and 1990-1992, sharing a border municipality has a positive effect on bilateral trade. Similarly, bilateral trade increased significantly with market size (GDP), the agreements have no significant effect except for SACU while the distance used as a proxy for transaction costs negatively affects bilateral trade.

N'garesseum (2003) and Gbetnkom and Avom (2005) examined the specific impact of the WAEMU intra-Community trade after the economic reforms of the years 90. The results of these studies (apart from the difference in the sample) indicate that regional integration substantially increase trade between the members states of the union after the economic reforms.

Considering the period 1962-1996 and as part of a gravity model, Carrere (2004) uses the Hausman-Taylor to show that regional trade agreements in Africa have generated a significant increase of trade among member countries.

Noumba (2005) studied the impact of regional economic integration and monetary arrangements in the Franc Zone of Cameroon's total exports from a gravity model. Il est arrivé aux résultats que les arrangements monétaires conclus dans le cadre de la zone Franc ont exercé un effet positif et significatif sur les exportations globales du Cameroun ; l'intégration régionale dans le cadre de l'UDEAC/CEMAC a eu un impact positif et significatif sur les exportations du Cameroun en direction des pays de la sous région CEMAC sur la période d'étude considérée. He came to the results that the monetary arrangements concluded in the Franc Zone have had a positive and significant effect on overall exports of Cameroon; again, regional integration as had a positive significant impact on exports of Cameroon towards the countries of the CEMAC sub-region over the study period considered. In addition, the distance is a barrier to exports, because the longer the more transaction costs and risks of damage to products will be great.

Agbodji (2007) studied the determinants of bilateral trade within the WAEMU from a gravity model. The results of this study indicate that the implementation of economic reforms aimed at regional integration and membership in a common currency area significantly increased intra-Community countries in the area of the study period considered. In addition, sharing a common border and a significant level of infrastructure act positively on intra-regional trade.

Mata (2008) analyzed the effect of creating UDEAC / CEMAC on imports excluding UDEAC / CEMAC, Congo, Gabon and Cameroon (which he extended to all countries of the CEMAC). The results of this study showed that the creation of the UDEAC / CEMAC did not significantly reduce the trade of the six countries in the region with the rest of the world.

The originality of this work compared to other studies is that it evaluates the impact of preferential economic reforms implemented in the 1990s within the CEMAC on variables that may affect trade between member countries of the CEMAC.

3. Econometric Model

We rely in this study on the gravity model because it has a number of advantages:

- The high sensitivity to economic conditions, which can add dummies variables to highlight the specific exchanges between the partner countries such as the existence of common borders, cultural affinity, trade

policies and exchange the belonging to the same group ... because it is often difficult to understand these features by explicit variables that can measure their impact;
- Flexibility in the sense that one can add or remove variables in the model;
- A coherent theoretical framework for the analysis of trade flows between different countries or regions, taking into account the variables of traditional models of international trade (comparative advantage, static and dynamic).

3. 1 Spécification du Modèle Model Specification

Given their diversity, the gravity models in their basic form explain the bilateral trade volume between two countries i and j, measured here by exports (Xij), as according to their respective incomes (Y (j)), of their respective populations (Pi (j)) and geographic distance (Dij) between the two capitals or economic policies.
Thus, we have: *(1)*

Where:

Yit and Yjt denote the GNP of the exporting country i and importing country j at time t;
Pit and Pjt mean populations of the exporting country i and importing country j at time t respectively;
Dij is the distance between the capitals (economic or political) of the two countries swingers.
In its simplest form, all the exponents of equation (1) are equal to 1 and after linearization; we obtain the base model in its logarithmic form as:

Ln X**ijt** = ß1Ln Yit +ß2Ln Yjt

LnX**ijt** = ß1Ln Yit + ß2Ln YJT +ß3LnPit + ß4LnPjt + ß5LnDij +εij

Where:

εij the error term distributed according to a log-normal distribution with E (Inεij).
Thus, the gravity model retained as part of our work is an enriched form from that of Linneman (1966) and Bergstrand (1985) presented as follows:

Ln Xe**it** = ß1LnPNBet +ß2LnPNBit

LnXe**it** = ß1LnPNBet + ß2LnPNBit +ß3LnPOPet + ß4LnPOPit + ß5LnDISTei +εeit

Where:

GNPet means the GNP of the country of origin or exporting country;
GNPit means the GNP of the importing country;
POPet is the population of the exporting country;
POPit is the population of the importing country;
DISTei refers to the distance between the capitals of both countries;
εei the error term distributed according to a log-normal distribution with E (Inεij)
In the empirical literature, the previous model is rarely found in this form. Indeed according to the objectives that bind to the authors, several variables including dummy are usually introduced to capture the specific effects of bilateral trade. For example, Frankel (1997) and Matyas (1997) have introduced regional variables (historical, cultural, ethnic and political) to assess their effects on bilateral trade. Longo and Sekkat (2001) have added to the basic equation dummy variables to take into account the effects of economic policies, foreign direct investment and political tensions in the exporting and importing countries. Linneman (1966), Aitken (1973), Elbadawi (1997), Yeats (1998), Longo and Sekkat (2001), Ngaresseum (2003) and others added to reflect the effect of membership countries an economic bloc or customs union, etc..

3.2 Analysis of Variables

In this perspective, to highlight the determinants of Community trade in CEMAC sub-region in the period before and after the economic preferential reforms of mid-90s, we estimate a gravity equation model increased by geographical and cultural affinities. Il s'agit des variables « frontière » Fei et celle destinée à

capter l'effet des affinités culturelles sur les flux commerciaux (Lei). These variables are "border" (Fei) and that designed to capture the effect of cultural affinity on trade flows (Lei). From the foregoing, we have the following specification:

- The variable "distance" is a proxy, which allows evaluating or approximating the costs of transport and / or transactions generated by trade between the two partner countries. As part of our work, this is the straight line distance expressed in km and in a gravity model, this variable (DISTei) acts as a resistance factor and negatively affects the volume of bilateral trade. So, the assumption at this level is that, the more the transaction costs (transport, risk of damage, longer delivery times ...), the higher trade tends to decrease.
- The variable "border" (Fei) is introduced to account for the effects of geographic proximity on bilateral trade.. Fei variable takes the value 1 when both countries share a border trader and 0 otherwise. The expected sign for this variable is positive. Therefore, sharing a common border is expected to increase trade within a group.
- The variable "language" (Lei) allows taking into account the cultural specificities of the countries swingers. It takes the value 1 when countries share a swingers same official language and 0 otherwise. It is supposed to have a positive impact on trade.
- The variable "gross national product" (GNP) is used to take into account the size of the economies considered. A high level of income of the exporting country indicates a high level of production, increasing the availability of goods for export. So, it positively affects the volume of bilateral trade. The coefficient of the income of the importing country is assumed to be positive since a high level of income in the importing country suggests an increase in import demand.
- The variable "population" is to define the effect of absorption, namely economies of scale, can also be interpreted as an important source of business opportunity between partner countries (markets for goods for sale). Thus, the assumption here is that a large population is a guarantee of market opportunities for products and it also provides an abundant labor without which, nothing can be produced. The coefficient of the population of the exporting countries (PoPe) can have a positive or negative sign depending on whether either the country exports less when it is big (absorption effect) or more when it is a small country (economies of scale). The coefficient of the population of the importing country (POPi) also has an ambiguous sign for similar reasons. It may also reflect certain self-sufficiency in factor endowments (labor, physical capital and human capital).

Taking into account all these variables, the model estimate is presented as follows:

$$\text{Ln Xeit} = ß1\text{lnPNBet} + ß2\text{LnPNBit} + ß3\text{LnPOPet} + ß4\text{LnPOPit} + ß5\text{LnDISTei} + ß6\text{Lei} + ß7\text{Fei} + \varepsilon\text{ei} \quad (2)$$

3.3 Data Sources and Estimation Techniques

3.3.1 Sources of Data Used

The sample consists essentially of six CEMAC countries. The analysis period between 1984 and 2003 is divided into two periods of ten years each, in 1984 -1993 and 1994 -2003 located before and after the preferential reforms. The first period can observe the evolution of each driver before the reforms of the 1990s. The second evaluates (indirectly) the additional impact of the reforms adopted from the second half of the 1990s on these determinants of intra-Community trade.

Given the literature review that informed the construction of a research question, the data used in this work are of secondary data:

- Annual exports (million USD) are obtained from several sources including: "International Trade Statistics Yearbook" of the United Nations (various issues) of the National Directorate of Statistics, the National BEAC Yaounde and "African Development Indicators," World Bank (various issues).
- Gross national product (GNP) and the total population are from the "African Development Indicators 2007" of the World Bank. As trade flows, the data for these two variables are measured

respectively in millions of current USD and million respectively.

- Distances in kilometers in a straight line separating the economic capitals (or political) of countries swingers are obtained from General atlas Larousse 2005.

3.3.2 Techniques for Data Analysis

The collected data were analyzed using the software Eviews, and they consist of an unbalanced panel data from six partner countries with 235 observations.

The estimation of the gravity model specified above is made from the technique of generalized least squares in panel data. Using the methodology of panel data is that it has several advantages over other methods (cross-sectional analysis for example), including:

- it brings out the importance of relationships between variables over time;
- Its ability to manage non-observable individual effects between two trading partners, because when these individual effects are omitted, the OLS estimation is biased if these effects are correlated with regressors.

i. Test of stationarity

The stationarity tests can detect the presence of unit root in a series. Thus, two unit root tests have been used as part of our work: the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests.

The results of these tests show that in both cases, the variables are globally and individually stationary (see the following tables for the two sub-periods).

Table 1. Stationary test for the period 1984 - 1993

Panel unit root test : Summary Sample : 1984-1993 Exogenous variables : Individual effects User specified lags at : 1 Newey – West bandwidth selection using Bartlett kernel				
Method	Statistic	Prob**	Cross sections	Obs Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin Chu t*	-15.1997	0.0000	23 23	168 168
Breitung t- stat	1.94759	0.0257	23 23	145 145
Null: Unit root (assumes common unit root process)				
Im, Pesaran and Shin w-stat	-4.30859	0.0000	23 23	168 168
ADF-Fisher Chi-square	88.1096	0.0002	23 23	168 168
PP – Fisher Chi-square	142.087	0.0000	25 25	211 211
Null: Unit root (assumes common unit root process)				
Hadri Z-stat	1.75544	0.0396	25 25	242 242

**Probabilities for Fisher tests are computed using an asymptotic Chi Square distribution. All other test assumes asymptotic normality.

Table 2. Stationary test for the period 1994 - 2003

Panel unit root test : Summary Sample : 1994-2003 Exogenous variables : Individual effects Automatic selection of maximum lags Automatic selection of lags based on SIC: 0 to 1 Newey – West bandwidth selection using Bartlett kernel				
Method	Statistic	Prob**	Cross sections	Obs Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin Chu t*	-3.73507	0.0001	23 23	168 168
Breitung t- stat	-1.04183	0.1487	23 23	145 145
Null: Unit root (assumes common unit root process)				
Im, Pesaran and Shin w-stat	-1.52801	0.0633	23 23	168 168
ADF-Fisher Chi-square	20.5246	0.0578	23 23	168 168
PP – Fisher Chi-square	29.2709	0.0036	23 23	211 211
Null: Unit root (assumes common unit root process)				
Hadri Z-stat	3.63876	0.0001	25 25	242 242

**Probabilities for Fisher tests are computed using an asymptotic Chi

- Square distribution. All other test assumes asymptotic normality.

ii. Estimate

The results of the empirical estimation will allow us to determine the impact of preferential economic reforms on the determinants of intra-trade; in other words, depending on the robustness of estimated results, their significance will be evaluated by comparing the impact of the coefficients of the two sub-periods as well as their degree of significance.

Table 3. Results of the estimation

Independent variables	1984 - 1993		1994 - 2003	
	Coefficients	t - statistics	coefficients	t - statistics
FEI	- 3828523	- (2.279198)*	4.47 E +09	(19.08026)*
LEI LEI	0.816105 0	(3.808006)*	14.87262	(0.926258)
DISTEI	- 0.010241	- (5.901988)*	-4.34255	-(9.630218)*
PNBE GAWR	1.94 E -13	(0.494393)	-0.074101 -	-(2.610705) **
PNBI PNBI	1.56 E -13	(0.420422)	-0.359831	-(6.689834)*
POPE POPE	2.02 E -06 2	(15.44943)*	0.145771	(1.740001)***
POPI POPI	- 6.00 E -08	-(0.496809)	179.4829	(3.196564)*
Number of observations	- -	235 235	- -	235 235
R2 R2	0.659326	- -	0.901757	- -
adjusted R2	0.650361	- -	0.889212 0	- -
F-Statistic	73.54348 73	- -	71.330457	- -

NB: Figures in parentheses are the t-statistics. *, ** And *** indicate that coefficients are respectively significant at 1%, 5% and 10%.

The estimation results of the two periods show that for the second period, apart from Lei (sharing a common border), other statistical tests (Student's t) are significant at conventional levels of 1%, 5% and 10% , while in the first period, three variables were not significant.

The adjusted coefficient of determination for the first period shows that the independent variables explain more than 60% changes in bilateral exports of the six countries. That of the second period shows that, these same variables explain more than 80% changes in bilateral exports of the countries.

Similarly, the coefficient of Fisher in the first period (F-statistic = 73.54348) and the second period (F-statistic = 71.90133) show that the model used is generally good (good fit). One can also agree that the model coefficients have the expected sign overall:

- Cultural affinities considered here by the variable language (LEI) positively affect intra-Community trade (t-statistic = 3.808006) and is significant at 1 The degree of significance is more in the second period when this variable becomes insignificant. This would reflect the fact that the institution of CEMAC in 1994 and all the measures it has brought in its wake (strengthening of the integration process among others) have not had a significant influence between countries as swingers all CEMAC countries already speak the same language. Also the only country that is Hispanic Equatorial Guinea adopted French as their official language.
- As concern the variable (FEI) which assesses the impact of geographic proximity (or sharing a common border) on trade within the subregion, it significantly affects trade internal sub-region during the first period with a Student's t significant at 1%. Also during the second period, the significance is accented with a student's t passes from - 2.27 to 19.080. This result would indicate that before the reforms of 1994, sharing a border or geographical proximity reduces the exchanges between the countries of the region because many taxes and customs controls and illegal abuse, police harassment of the many border. But from 1994, the result suggests that tax harmonization (tax and customs reform), the strengthening of measures to facilitate the free movement of persons, goods and factors of production ... have somewhat contributed to facilitate exchanges of trade within the CEMAC group.

- In terms of the variable distance, which evaluates the effect of transaction costs on internal trade of the combination, we see that it has a negative and significant impact on trade within the sub-region in the first period as the second. This assumes that the more the distance (transport costs, risk of damage ...) the lower intra-Community trade. This is more pronounced during the second period and suggests that the weak and poor road conditions increase costs and make the countries of the region more vulnerable to stock shortages. Thus, reforms (tax and customs) to remove these barriers, as well as the construction of some roads linking some countries of the region have failed to significantly reduce the impact of transaction costs on trade in within the CEMAC group. This result is similar to that obtained by Agbodji (2007) as part of the UEMOA and Cureau (2000) as part of SADC.

- The GNP of the exporting countries (GAWR) has the expected sign in the first period, but its coefficient is not significant. By cons, The GNP has a negative and significant sign on trade within the sub-region during the second period. This last result invalidates our hypothesis that the higher the income of the exporting countries, the higher production capacity and volume of goods available for exports increased. This result therefore indicates that if income increases by 10% (all else being equal), intra-regional exports in CEMAC zone decreases by 0.7%. So the devaluation carried out during the second period accompanied by an increase in income in these countries had a negative impact on intra-Community trade in the subregion. This is explained by the absence of industries processing raw materials, which are dependent on the countries studied, which would enable them to transform these into finished products while creating added value to meet the demand for goods is rather directed towards the outside of the region. This also indicates that the external tariff adopted in 1994 (revised from that which existed before) is not applied to bring the country to consume the goods from the region. The weakness of the structure of production could

also be explained by episodes of civil wars and rebellions observed during the second period in some countries of the region (Congo, Chad, CAR ...). The statistical issues raised may also explain this situation.

- The GDP of the importing States (PNBI) also has a positive and non significant sign in the subregion during the first period. By cons, during the second period, this effect becomes negative and significant at 1%. The coefficient of this variable indicates that a 10% increase in income in importing countries (PNBI) causes a downward variation of 3.5% (ceteris paribus) of bilateral exports. Unlike the GDP they used, the results obtained by Gbetnkom and Avom (2005) and Agbodji (2005) in the UEMOA, Cureau (2000) for SADC are contrary to what we have just obtained.

  The result obtained in the CEMAC (for PNBI variable) explained by the low of purchasing power in these countries, the homogeneity in the production structures of the countries under study, the lack of complementarity that would diversify and increase the range of products offered in the sub region to meet the diversity of demand, while limiting the outflow of currency for goods from countries other than the sub-region.
- About the variable population of the exporting country (POPE), we see that during the first period, it has a positive and significant sign at 1% of bilateral trade in the subregion. The significant effect is still required in the second period even though the effect is only 10%. Thus, the higher the population of the exporting countries increases, the higher its production and therefore also its trade (economies of scale). Given the trend of production in the economies of six countries, there is the fact that this population has almost no influence on the production of goods available in the sub-region.Indeed the advantage presented by this population is not used because of rising unemployment that affects a large part of it (working population) and because of the inadequacy or incompatibility between the quality of teaching and the pressing needs observed. In addition, this population could be a factor in increasing productivity in agriculture essential if measures to support the latter and the state subsidies they were granted.
- With regard to the variable (POPI), which represents the population of the importing countries, it has a negative and insignificant sign during the period before the reforms. During the second period for cons, it has a positive and significant sign at 1% of bilateral trade in the CEMAC zone. This reflects an increase in the population of the importing countries of 10% (ceteris paribus) increases intra-Community trade in the CEMAC 17.9%. Indeed, this result indicates that the population of this sub-region is a vast market for goods manufactured in the region. But in reality, a greater proportion of goods produced in most of the time is for countries other than the sub-region (due to higher prices offered). In addition, this population still does not care to goods from the sub-region because of its low per capita income and this could add obstacles to the free movement of persons and property observed in the sub-region.

4. Conclusion

The objective of this study was to evaluate the impact of reforms (preferential and community) of the mid-90s on some determinants of intra-Community trade in the CEMAC sub-region before and after the reforms of 1994. To achieve this goal, the analysis period selected (1984 - 2003) was split into two periods: 1984 -1993 and 1994 - 2004, representing the period before and one after the reforms. And a gravity model was estimated using data collected on a sample of six countries in the CEMAC sub-region (Cameroon, Gabon, Congo, CAR, Chad and Equatorial Guinea) as part of an unbalanced panel by the method of generalized least squares.

The particularity of this study is that it allowed us to identify the population (the exporter and importer), sharing a common border and cultural affinities as determinants of increased trade within the CEMAC sub-

region. It showed that the population growth seen both as a market factor (increased market share) and as the economies of scale has a positive impact on intra-Community trade in the subregion, confirming one of our hypotheses. In addition the impact is more pronounced and significant after the reforms. For cons, the study showed that transaction costs and transport measured by the variable distance between the countries swingers have a negative impact on trade within the group even after the reforms of the mid- 1990, which also confirms the assumption made on this variable.

It also shows that GDP (importer and exporter) have a significant effect after the reforms, but this effect is negative. This sign can be described as absurd, even if this can be explained by the fact that as the GNP of the CEMAC countries increases, its people are turning instead to the importation of out-CEMAC. The variable distance would be a constraint to the expansion of trade within the CEMAC group because despite the construction of some infrastructure linking several cities of the countries concerned, this variable has a negative effect on regional trade.

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